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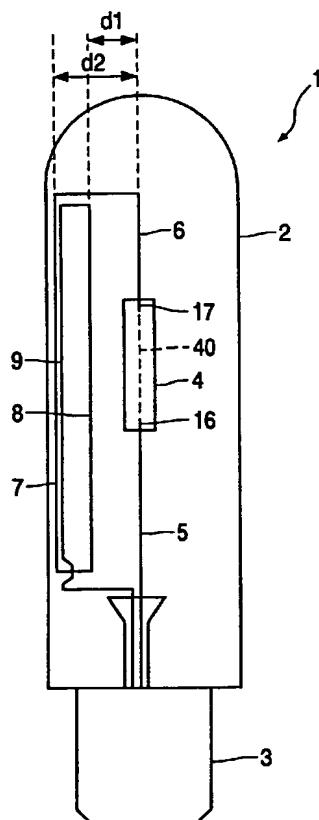
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[Continued on next page]

(54) Title: DISCHARGE LAMP



(57) Abstract: The invention relates to a discharge lamp having an outer bulb that is provided with a lamp cap at one end. The outer bulb encloses a discharge vessel comprising electrodes, a first current conductor and a second current conductor arranged at some distance from the first current conductor, which current conductors establish an electric connection between the electrodes and the lamp cap. The shortest distance between the electrodes forms a discharge axis of the discharge vessel. Part of the second current conductor is placed substantially sidelong to the discharge axis. According to the invention, the second current conductor comprises successive parts arranged sidelong to the discharge axis and at mutually different distances from said axis.



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INTERNATIONAL SEARCH REPORT

International Application No

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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H01J61/10 H01J61/34 H01J61/82

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 606 223 A (ERIGUCHI HIROYASU ET AL) 25 February 1997 (1997-02-25) abstract; figures 16,17,19-22 column 6, line 43-60; figures 21,22 column 1, line 12-25	1-4,6,7
X	FR 2 553 575 A (TOKYO SHIBAURA ELECTRIC CO) 19 April 1985 (1985-04-19) abstract; figures 1-3,5,6 page 10, line 30 -page 11, line 32; figure 5	1-7
X	US 2 930 920 A (BIRD LESTER F) 29 March 1960 (1960-03-29) column 2, line 70 -column 3, line 19; figures 3,4	1-4,6

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the International filing date

"I" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the International filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

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INTERNATIONAL SEARCH REPORT

International Application No

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 138 629 A (TUNGSRAM RESZVENYTARSASAG) 24 October 1984 (1984-10-24) page 2, line 74-98; figure 1 ---	1
X	US 4 341 975 A (PHILLIPP ROBERT G ET AL) 27 July 1982 (1982-07-27) column 2, line 56 -column 3, line 59; figure 1 -----	1,6,7

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national application No.
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Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependant claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-7

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

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This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-7

A discharge lamp comprising an outer bulb; the outer bulb comprising a lamp cap at one end; the outer bulb accomodating a discharge vessel provided with electrodes, and a first pole and a second pole at some distance from the first pole, which poles establish an electrical connection between the lamp cap and the electrodes, at least a part of the second pole being mainly laterally positioned with respect to a discharge axis, said discharge axis forming the shortest connection between the electrodes, wherein the second pole is positioned unilaterally with respect to the discharge vessel, the second pole being shaped such that a magnetic field at the location of the discharge vessel is minimized (claim 1);

wherein the second pole is provided with a number of successive parts which are laterally positioned with respect to the discharge axis in the discharge vessel, which parts are spaced apart (claim 2).

1.1. Claims: 6,7

A discharge lamp as claimed in claim 1, wherein the discharge vessel is embodied so as to be hermetical-tight, the discharge vessel accomodating at least one metallic element.

2. Claims: 8,9

A discharge lamp as claimed in claim 1,

wherein the outer bulb is provided with a diffuse layer (claim 8) or with a fluorescent layer (claim 9).

Please note that all inventions mentioned under item 1, although not necessarily linked by a common inventive concept, could be searched without effort justifying an additional fee.

I. The common concept linking together claims 2 to 9 is the subject-matter of claim 1:

- (a) A discharge lamp comprising an outer bulb; the outer bulb comprising a lamp cap at one end; the outer bulb accomodating a discharge vessel provided with electrodes, and a first pole and a second pole at some distance from the first pole, which poles establish an electrical connection between the lamp cap and the electrodes, at least a part of the second pole being mainly laterally positioned with respect to a discharge axis, said discharge axis forming the shortest connection between the electrodes, wherein the second pole is positioned unilaterally with respect to the discharge vessel, the

second pole being shaped such that a magnetic field at the location of the discharge vessel is minimized.

Concept (a) is not novel, see the e.g. the documents US5606223A (figures 19-22 and related text in column 6: in all these figures, the second pole B is positioned unilaterally with respect to the discharge vessel 11, 11A and is shaped such (together with the first pole A) that a magnetic field at the location of the vessel is cancelled out), FR2553575A (figures 1 and 2 and related text on pages 8-10: the second pole 18a, 22, 23 is shaped such that a magnetic field at the location of the vessel (namely the magnetic field at the electrode 17a, 17b) is minimized), or GB2138629A (figure 1 and related text: second pole 7).

II. Claim 1 differs in no feature from concept (a). The remaining claims can be grouped according to their special technical features (STFs), representing their contribution over the known concept (a), as follows:

1. Claims 2-5; of which the STF is that the second pole is provided with a number of successive parts which are laterally positioned with respect to the discharge axis in the discharge vessel, which parts are spaced apart; which may be regarded as solving the problem of minimizing the magnetic field at the location of the discharge vessel while at the same time keeping the shape of the second pole simple.
- 1.1. Claims 6, 7; of which the STF is that the discharge vessel is embodied so as to be hermetical-tight and that the discharge vessel accommodates at least one metallic element; which may be regarded as solving the problem of permitting a high pressure discharge and an increased efficiency of the discharge.
2. Claims 8, 9; of which the STF is that the outer bulb is provided with a diffuse layer (claim 8) or with a fluorescent layer (claim 9); which may be regarded as solving the problem of avoiding dazzle by direct light from the discharge vessel.

The designation of any feature as "special technical feature" in the present communication does not anticipate any possible result of the international preliminary examination with respect to clarity, novelty or inventive step.

There is no special technical feature in common to two or more of these groups.

The above groups equally do not share any corresponding technical features because each of the above special features produces a different technical effect and relates to the solution of a different technical

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problem. The above problems can be solved independently and do not form a linked series in which the solution of one problem depends on first solving the preceding problem, despite the trivial fact that a more general problem such as "improving a discharge lamp", which is no inventive common concept, can always be found. Thus they are technically independent.

Therefore the technical relationship between the subject-matter of the above (groups of) claims required by Rule 13.2 is lacking, and the requirement for unity of invention referred to in Rule 13.1 PCT is not fulfilled.

III. Hence the International Searching Authority considers that the separate inventions or groups of inventions 1., 1.1., and 2. are not so linked as to form a single general inventive concept.

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